

as early as February 20. He thinks it clearly biennial and would be glad to know from other observers whether it is always so.

Sisymbrium Thaliana, a little later flowering than the *Draba*, is also biennial. In the first week of March it was just beginning to show flowers.

ERYTHRÆA CENTAURIUM.—In the summer of 1878 I discovered three or four fine plants of *Erythræa Centaurium*, Pers., nicely in blossom, on the grounds of the Agr'l Coll., Lansing, Mich. Some time before this Prof. Beal found specimens of the same in an open swamp near by. None have been found in the locality since '78.

Hydrocotyle umbellata, L., also occurs near here on the shores of small lakes.—L. H. BAILEY, JR.

SOME PLANTS OF FRANKLIN CO., KY.—For more than a year past I have been indebted to your GAZETTE for many little things of great interest to me, and I feel that I ought to make some return (or strive to do so) by giving you some of my notes on last year's collecting in this county (Franklin), premising, however, that I am a beginner in botany.

Hepatica triloba and *acutiloba* are both found on the Lower Silurian limestone hills or cliffs of Kentucky River, the latter species more common and often seen with the lateral lobes of the leaves again slightly lobed.

Isopyrum biternatum, T. & G., occurs in similar situations, but is more rare.

Hydrastis Canadensis, L., is common in rich woods and often has an additional leaf, three lobed, just below the flower, making three leaves on the stem.

Menispermum Canadense, L., is common, but it is rare to find a specimen with a woody stem nearly an inch in diameter.

Podophyllum peltatum, L., I found once with but one leaf on the flowering stem. I thought it rather interesting to find on one cliff at some distance from any dwelling three introduced plants, viz.: *Papaver somniferum*, L., *Bupleurum rotundifolium*, L., and *Vinca minor*. The latter covers a large portion of the wooded hill side, while the former grew scattered among the loose stones near the base. How the *Bupleurum* got there I cannot imagine, as I have never seen it anywhere else in the county.

Cardamine rhomboidea, var. *purpurea*, Torr., is common in rich soil at the base of the limestone cliffs.

Arabis patens, Sulliv. is found in the same situations, but is not common.

Vesicaria Shortii, T. & G., is quite abundant in a few localities in similar situations to the above.

Lepidium intermedium, Gray, is rare in dry woods.

Solea concolor, Ging, occurs abundantly in the rich soil on the river

cliffs, along with *Viola pubescens* and var. *scabriuscula*, T. & G. On wooded hill-sides, *Hypericum sphaerocarpon*, Mx., occurs with *Tragia macrocarpa*, Willd., which last, according to Gray, has no stinging hairs; but they certainly made themselves felt on the back of my hands and wrists, while unable to penetrate the thicker epidermis of the fingers and palm. —R. H. WILDBERGER, Ky. Mil. Institute, Farmdale, Ky.

SYRACUSE BOTANICAL CLUB.—This active club does not confine its attention to field work, but has been busily employed all winter. They have held weekly meetings for the reading of papers on all the important orders of plants, illustrated by specimens collected the season before. Such a course has kept them very familiar with their local flora and we anticipate large results from it during the coming season. They will take the field thoroughly prepared by a season's experience in collecting and a winter of study, and our prophecy is that the summer of 1880 will bring to them richer results than that of 1879. Physiological botany has not been neglected, for they have considered such subjects as "Perfume and Color" in plants, "Complementary Colors," "Motion in Plants" and "Insectivorous Plants."

We write this not so much for the encouragement of the club, for they do not need it, but to call attention to this most profitable way of studying botany where several persons interested in the science are within reaching distance of each other. One person working alone is apt to dissipate his energies over a very broad field and the result is small. But put several workers together and concentrate their work and it brings important results. The little things, which by themselves appear insignificant, when brought together, form an aggregate which is of great importance.

CURTISS' NORTH AMERICAN PLANTS.—There is no better collector of plants than Mr. A. H. Curtiss, of Jacksonville, Fla. Not only does he succeed in collecting the rarest of species, but makes beautiful specimens, and to receive a bundle from him, with species carefully separated and labels handsomely printed, is a pleasure, the full enjoyment of which only a botanist can appreciate. Mr. Curtiss has just issued Fascicle III of his N. Am. Plants. In it are found 215 species and varieties, some 15 being supplementary to Fascicles I and II. The price of this Fascicle, at Cambridge, is eighteen dollars.

TORREY BULLETIN.—The February number is at hand, even handsomer and more attractive than the last. Putting in each month a short synopsis of the proceedings of the club is a good idea, for we all want to know what these clubs are talking about. In the proceedings of this month we notice a peculiar idea advanced by Dr. Jarvis in a paper on "Galls." The idea was not new to us, but its publicity was. It is that the gall insect is a product of the plant. It is contended

that galls are normal products of the plants on which they grow, and that these galls, by an evolution of their protoplasm, eventually give birth to animal life. This seems to "out-evolutionize" the most radical evolutionist.

Mr. Austin describes two new genera of mosses, dedicating one to Capt. J. Donnell Smith and the other to Mr. Eugene A. Rau. Considerable space is devoted to botanical news, a department that could be made exceedingly interesting and important in the organ of a large club so centrally located as the Torrey club. We note with pleasure that Mr. W. R. Gerard has been elected assistant editor of the Bulletin.

THE FUNCTION OF CHLOROPHYLL.—One of the most important recent contributions to physiological botany is contained in a recent communication to the Berlin Academy of Sciences, by Dr. Pringsheim, which appears to throw considerable fresh light on the function of chlorophyll in the life of the plant.

Having been led by previous researches to the conclusion that important results might be obtained by the use of intense light, he combined an apparatus by which the object under view should be brightly and constantly illuminated by a strong lens and a heliostat. If in this way an object containing chlorophyll—a moss-leaf, fern-prothallium, chara, conferva, or thin section of a leaf of a phanerogam be observed, it is seen that great changes are produced in a period varying from three to six or more minutes.

The first and most striking result is the complete decomposition of the chlorophyll, so that in a few minutes the object appears as if it had been lying for some days in strong alcohol. Although, however, the green color has disappeared, the corpuscles retain their structure essentially unaltered. The change then gradually extends to the other constituents of the cell; the circulation of the protoplasm is arrested; the threads of protoplasm are ruptured and the nucleus displaced; the primordial utricle contracts and becomes permeable to coloring matters; the turgidity of the cell ceases; and the cell presents, in short, all the phenomena of death.

That these effects are not due to the action of the high temperature to which the cell is exposed under these circumstances is shown by the fact that they are produced by all the different parts of the visible spectrum. The result is the same whether the light has previously passed through a red solution of iodine in carbon bisulphide, through a blue ammoniacal solution of cupric oxide, or through a green solution of cupric chloride. If the carbon bisulphide solution of iodine be so concentrated that only rays of a greater wave-length than 0.00061 mm. can pass through it, these effects are not produced, although about eighty per cent. of the heat of white sunlight is transmitted. On the other hand, if the ammoniacal solution of cupric oxide be so concentrated that the whole of the rays of a less wave length than 0.00051 mm. are absorbed, a rapid and powerful effect is pro-